

## *Pseudomonas aeruginosa*

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- “*Pseudomonas aeruginosa* is an important opportunistic pathogen that can cause acute respiratory infections in immunocompetent patients and chronic infections in immunocompromised individuals and in patients with cystic fibrosis.”
- Relatively large genome, high number of genes conferring protective in a variety of environments
- Fairly resistant to antibiotics (impermeable outer membrane)
- Cell density dependent expression of virulence factors results in two □□□
  - Single cell: highly motile, acute infection
  - Biofilm: cells produce ECM, which shields them from antibiotics and the host immune response, as well as facilitates development of antibiotic infections
- Biofilms associated chronic *Pseudomonas* infections are prevalently observed in patients who suffer from severe burn wounds, diabetic foot infections, otitis media (keratitis), and the lung especially in cystic fibrosis (CF) patients.
- Common nosocomial and environmental infection
- “Resistance of the *Pseudomonas* to continued to lack an association with mortality in the adjusted model (RR, 1.13; 95% CI, 0.98–1.30, even after adjustment for confounding, emergence of resistance was associated with increased mortality (RR, 1.30; 95% CI, 1.02–1.65).”
- “Our principal finding was that emergence of resistance was associated with severe adverse outcomes. Emergence of resistance with a 100% increase in mortality, higher rate of secondary bacteremia, 2 fold increase in hospital days. Emergence of resistance was associated with a 100% increase in mortality.”
- “*Pseudomonas aeruginosa* infection in patients with cystic fibrosis is associated with deteriorating lung function and increased mortality.”
- Four subjects died (age 3–20 years). Each had resistant, mucoid strain of *Pseudomonas* before 4 years of age.
- Infection in CF patients resulted in decreased pulmonary function, no difference in those with or without infection
- Mortality in 39% of cases in Seoul National University study, 61%
- Risk factors for mortality include severe sepsis, pneumonia, delay in increasing APACHE II score
- Sites of infection include: soft tissue and bone, urine, and lung
- Patients may require surgery (if infection of soft tissue or bone)
- Infection associated with increased length of stay and higher cost
- Outcome worse for patients with hospital-acquired infection compared to other sites

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